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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,450	03/31/2004	Alex Spiridon	IL-11305	7785

7590 05/17/2007  
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EXAMINER
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MATIN, NURUL M

ART UNIT	PAPER NUMBER
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2611

MAIL DATE	DELIVERY MODE
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05/17/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/815,450

Applicant(s)

SPIRIDON ET AL.

Examiner

Nurul M. Matin

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2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5-43 is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☒ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 03/31/2004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 14 is objected to because of the following informalities: the recitation in line 2 of claim 14 "MAI" is improper, because this term has not been introduced previously; it is suggested to be changed to "multiple access interference (MAI)". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (fig.1) [hereinafter, refers to as "prior art"] in view of Nagarajan et al, US 2005/0180364.

Re claim 1, Prior art discloses an ultra-wideband (UWB) communication receiver, comprising (prior art, fig.1): at least one delay electrically coupled to said common input line and configured to reproduce a predetermined lag interval D of said one or more transmitted pulse pairs (fig.1, page 3, Para [0036], line 8-12, "as part of transceiver 100, is shown configured to receive signals (shown as (r)t 20) from UWB TR transmitter 12

and such a receiver 22 includes a delay 24, denoted as D, split off a main line of the received signal (r)t 20 that includes transmitted pulse pairs from transmitter 12"); a signal multiplier electrically coupled to said at least one delay and said output line of said feedback loop for multiplying delayed versions having said lag interval D of said transmitted pulse pairs and one or more of said looped transmitted pulse pairs(fig.1, page 3, Para [0036], line 13-15, "in conventional receiver 22 is a multiplier 26 for multiplying the delayed and non-delayed versions of transmitted pulse pairs encompassed within received signal (r)t 20"); and an integrator configured to integrate a product signal output by said signal multiplier, wherein an integrator output is analyzed to determine an output signal that indicates said predetermined encoded data(fig.1, page 3, Para [0036], line 13-16, "in conventional receiver 22 is a multiplier 26 for multiplying the delayed and non-delayed versions of transmitted pulse pairs encompassed within received signal (r)t 20, an integrator 28"). But prior art fails to teach that a feedback amplifier having an input line and an output line, said input line electrically coupled to a common input line, wherein said feedback amplifier, said input line and said output line are configured as a feedback loop so as to loop at least once, one or more transmitted pulse pairs received on said common input line, wherein said transmitted pulse pairs have a predetermined encoded data and a predetermined symbol repetition rate. However, Nagarajan does (page 9, Para [0119], line13-19, "a maximum number of iterations that needs to be satisfied before the interference-cancelled signal is output from the feedback loop. For example, the receiver may function in a feedback mode that performs successive interference cancellation, or

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attempts to improve the accuracy of interference estimates until the performance metric or the maximum number of iterations is achieved").

Therefore, taking the combined teaching of prior art and Nagarajan, as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the arrangement of a feedback amplifier having an input line and an output line, said input line electrically coupled to a common input line, wherein said feedback amplifier, said input line and said output line are configured as a feedback loop so as to loop at least once, one or more transmitted pulse pairs received on said common input line, wherein said transmitted pulse pairs have a predetermined encoded data and a predetermined symbol repetition rate as thought in Nagarajan into prior art to achieve the interference cancellation.

Re claim 3, Prior art and Nagarajan references teach the receiver of claim 1, and Prior art also teaches that feedback loop averages out interfering narrowband signals and white noise by adjusting a feedback loop travel time delay to substantially match said predetermined symbol repetition rate of said received pulse pairs (page 3, Para [0036].

Re claim 4, Prior art and Nagarajan references teach the receiver of claim 1, and prior art also teaches that encoding includes a relative polarity of a received transmitted data pulse with respect to a received transmitted reference pulse (page 3, Para [0036], line 13-17).

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (fig.1) [hereinafter, refers to as "prior art"], Nagarajan et al, US 2005/0180364 and in view of Mosinskis et al, US 6529563.

Re claim 2, prior art and Nagarajan fail to teach that a gain of said feedback loop is less than 1. However, Mosinskis does (col.4, line 20-24, "the gain of the positive feedback loop is less than one").

Therefore, taking the combined teaching of prior art, Nagarajan and Mosinskis, as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the arrangement of that a gain of said feedback loop is less than 1 as thought in Mosinskis into Prior art and Nagarajan so that the loop will not oscillate under normal operation after power-up.

#### ***Allowable Subject Matter***

Claims 5-43 are allowed if the above objections are overcome.

The following is an examiner's statement of reasons for allowance: claims 5-43 are allowed because the reference cited fail to teach, as applicant has, an ultra-wideband receiver comprising a primary delay to reproduce a predetermined primary lag interval of one or more transmitted pulse pair, and one or more secondary delays to produce one or more non-zero lag intervals, where a plurality of pulse multipliers and finite integrators designed to generate a plurality of data values indicative of a second order statistical function of said received pulse pairs from primary and at the one or more secondary delays are matched to a plurality of second order statistical values of a

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predetermined reference pulse to determine an output signal indicative of encoded information, as the applicant has claimed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nurul M. Matin whose telephone number is 571-270-1188. The examiner can normally be reached on mon-fri (7:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nurul Matin

  
MOHAMMED GHAYOUR  
SUPERVISORY PATENT EXAMINER